

Claims

1. An isolated polypeptide comprising an amino acid sequence which has at least 70% identity to the amino acid sequence of SEQ ID NO:2 over the entire length of SEQ ID NO:2.
2. An isolated polypeptide as claimed in claim 1 in which the amino acid sequence has at least 95% identity.
3. The polypeptide as claimed in claim 1 comprising the amino acid sequence of SEQ ID NO:2.
4. The isolated polypeptide of SEQ ID NO:2.
5. A polypeptide comprising an immunogenic fragment of a polypeptide as claimed in any one of claims 1 to 4 in which the immunogenic activity of the immunogenic fragment is substantially the same as the polypeptide of SEQ ID NO:2.
6. A polypeptide as claimed in any of claims 1 to 5 wherein said polypeptide is part of a larger fusion protein.
7. An isolated polynucleotide encoding a polypeptide as claimed in any of claims 1 to 6.
8. An isolated polynucleotide comprising a nucleotide sequence encoding a polypeptide that has at least 70% identity to the amino acid sequence of SEQ ID NO:2, over the entire length of SEQ ID NO:2; or a nucleotide sequence complementary to said isolated polynucleotide.
9. An isolated polynucleotide comprising a nucleotide sequence that has at least 70% identity to a nucleotide sequence encoding a polypeptide of SEQ ID NO:2, over the entire coding region; or a nucleotide sequence complementary to said isolated polynucleotide.

10. An isolated polynucleotide which comprises a nucleotide sequence which has at least 70% identity to that of SEQ ID NO:1 over the entire length of SEQ ID NO:1; or a nucleotide sequence complementary to said isolated polynucleotide.
11. The isolated polynucleotide as defined in any one of claims 7 to 10 in which the identity is at least 95%.
12. An isolated polynucleotide selected from:
  - (a) a polynucleotide comprising a nucleotide sequence encoding the polypeptide of SEQ ID NO:2;
  - (b) the polynucleotide of SEQ ID NO:1; and
  - (c) a polynucleotide obtainable by screening an appropriate library under stringent hybridization conditions with a labeled probe having the sequence of SEQ ID NO:1 or a fragment thereof said polynucleotide encoding a protein which has similar immunogenic properties of the protein of sequence ID NO: 2;  
or a nucleotide sequence complementary to said isolated polynucleotide
13. An expression vector or a recombinant live microorganism comprising an isolated polynucleotide according to any one of claims 7 - 12.
14. A host cell transformed with the expression vector of claim 13 or isolated polynucleotide of claims 7 to 13.
15. A process for producing a polypeptide of claim 1 to 6 comprising culturing a host cell of claim 13 under conditions sufficient for the production of said polypeptide and recovering the polypeptide from the culture medium.
16. A vaccine comprising an effective amount of the polypeptide of any one of claims 1 to 5 and a pharmaceutically acceptable carrier.
17. A vaccine comprising an effective amount of the polynucleotide of any one of claims 7 to 12 and a pharmaceutically effective carrier.

18. A vaccine comprising an effective amount of antigen presenting cells, modified by in vitro loading with a polypeptide of any one of claims 1 to 6, or genetically modified in vitro to express a polypeptide of claim 2 to 6 and a pharmaceutically effective carrier.
19. A vaccine as claimed in any one of claims 16 to 18 which additionally comprises a TH-1 inducing adjuvant.
20. A vaccine as claimed in claim 19 in which the TH-1 inducing adjuvant is selected from the group of adjuvants comprising: 3D-MPL, QS21, a mixture of QS21 and cholesterol, and a CpG oligonucleotide.
21. An antibody immunospecific for the polypeptide or immunological fragment as claimed in any one of claims 1 to 5.
22. A method for screening to identify compounds which stimulate or which inhibit the function of the polypeptide of any one of claims 1 to 5 which comprises a method selected from the group consisting of:
  - (a) measuring the binding of a candidate compound to the said polypeptide (or to the cells or membranes bearing the polypeptide) or a fusion protein thereof by means of a label directly or indirectly associated with the candidate compound;
  - (b) measuring the binding of a candidate compound to the said polypeptide (or to the cells or membranes bearing the polypeptide) or a fusion protein thereof in the presence of a labeled competitor;
  - (c) testing whether the candidate compound results in a signal generated by activation or inhibition of the said polypeptide, using detection systems appropriate to the cells or cell membranes bearing the polypeptide;
  - (d) mixing a candidate compound with a solution containing a polypeptide of any one of claims 1 to 5, to form a mixture, measuring activity of the polypeptide in the mixture, and comparing the activity of the mixture to a standard; or
  - (e) detecting the effect of a candidate compound on the production of mRNA encoding said polypeptide and said polypeptide in cells, using for instance, an ELISA assay.

23. A method for the treatment of a subject by immunoprophylaxis or therapy comprising *in vitro* induction of immune responses to a molecule of any one of claims 1 to 5, using *in vitro* incubation of the polypeptide of any one of claims 1 to 5 or the polynucleotide of any one of claims 6 to 10 with cells from the immune system of a mammal, and reinfusing these activated immune cells to the mammal for the treatment of disease.

24. A method as claimed in claim 21 wherein the treatment is for ovarian or colon cancer.

25. A process for diagnosing a disease or a susceptibility to a disease in a subject related to expression or activity of the polypeptide of any one of claims 1 to 5 in a subject comprising:

- (a) determining the presence or absence of a mutation in the nucleotide sequence encoding said polypeptide in the genome of said subject; and/or
- (b) analyzing for the presence or amount of said polypeptide expression in a sample derived from said subject; and/or
- (c) analysing for the presence of an mRNA encoding a polypeptide of claims 1 to 5 in a sample derived from said subject.

26. An isolated polynucleotide selected from the group consisting of:

- (a) an isolated polynucleotide comprising a nucleotide sequence which has at least 70% identity to SEQ ID NO:3 over the entire length of SEQ ID NO:3;
- (b) an isolated polynucleotide comprising the polynucleotide of SEQ ID NO:3;
- (c) the polynucleotide of SEQ ID NO:3; or
- (d) an isolated polynucleotide comprising a nucleotide sequence encoding a polypeptide which has at least 70% identity to the amino acid sequence of SEQ ID NO:4, over the entire length of SEQ ID NO:4.

27. A polypeptide selected from the group consisting of:

- (a) a polypeptide which comprises an amino acid sequence which has at least 70% identity to that of SEQ ID NO:4 over the entire length of SEQ ID NO:4;

- (b) a polypeptide in which the amino acid sequence has at least 70% identity to the amino acid sequence of SEQ ID NO:4 over the entire length of SEQ ID NO:4;
- (c) a polypeptide which comprises the amino acid of SEQ ID NO:4;
- (d) a polypeptide which is the polypeptide of SEQ ID NO:4; or
- (e) a polypeptide which is encoded by a polynucleotide comprising the sequence contained in SEQ ID NO:3.

28. A live vaccine composition comprising an expression vector or recombinant live micro-organism according to claim 13.